

Claims:

1. (Currently Amended) An apparatus for the continuous measurement of the thickness of a coating layer of a workpiece moved relative to the apparatus, characterized by a sensor with a plurality of senders of measuring beams and ~~[[with]]~~ a plurality of receivers for measuring beams reflected from the coating layer and/or from the work piece, ~~with the~~. The senders and the receivers at the sensor ~~being~~ are arranged in intermixed condition with one another, ~~and by a~~. A computer ~~provided for generating~~ generates a continuous measuring signal in dependence on the two parameters of the emitted ~~beams~~ and received measuring beams.

2. (Currently Amended) An apparatus according to claim 1 further characterized in that the senders and receivers lying next to one another ~~[[are]]~~ and collectively positioned in groupwise fashion, ~~that each~~. Each group has associated with it its own source of measuring beams and has associated with it its own detector for the beams reaching the receivers, ~~and in that further each~~. Each group has associated with it its own computer for forming a measuring signal.

3. (Currently Amended) An apparatus according to claim 1 ~~[[or 2]]~~, further characterized in that the senders are connected with the beam source and/or the receivers are connected with the detector by way of beam conducting fibers, preferably quartz fibers.

4. (Currently Amended) An apparatus according to claim 1 ~~one of claims 1 to 3~~ further characterized in that the sensor includes means for removing and for keeping removed contaminations from the sensitive outer surface of the sensor.

5. (Currently Amended) An apparatus integratable into a powder arm for the measurement of the thickness of a powder layer for the coating of can sheet material according to claim 2 ~~one of claims 2 to 4~~, further characterized in that the senders and the receivers are arranged in a sensor head and are connected by beam conducting fibers, preferably quartz fibers, with the associated beam source and the associated detector, that at the sensor head an exchangeable cover is provided for limiting the measuring width of the sensor, which includes cleaning means for protecting the

effective sensor surface, and in that the associated beam source and the associated detector are operably connected with a computer for generating a measuring signal.

6. (Original) An apparatus according to claim 5, further characterized in that the beam source creates infrared beams.

7. (Currently Amended) An apparatus according to claim 5 [[or 6]], further characterized in that the cleaning means has a cleaning channel running over the effective sensor surface and whose cover is penetrated in the region of the senders and receivers.

8. (Currently Amended) An apparatus according to claim 5~~one of claims 5 to 7~~, further characterized in that the beam conducting fibers have a diameter of 20 to 200 μ m, preferably 50 μ m.

9. (Currently Amended) An apparatus according to claim 5~~one of claims 5 to 8~~, further characterized in that the sensor head has three groups of senders and receivers, which groups are arranged in a line.

10. (Currently Amended) An apparatus according to claim 5~~one of claims 5 to 9~~, further characterized in that the sensor head has a fourth group with only senders and which by means of beam conducting fibers is connected with a source of light, preferably white light.

11. (Currently Amended) A seam covering arrangement with an apparatus according to claim 1~~one of claims 1 to 10~~.

12. (Currently Amended) A can welding machine with a seam covering arrangement with an apparatus according to claim 1~~one of claims 1 to 10~~.